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=> s (lignosulfornate or lignosulphonate or lignin sulphonate or lignin sulfonate) (10a) (bind####) and (manure or litter)
17 FILES SEARCHED...
L1 16 (LIGNOSULFORNATE OR LIGNOSULPHONATE OR LIGNIN SULPHONATE OR LIGNIN SULFONATE) (10A) (BIND####) AND (MANURE OR LITTER)

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=> d 1-16 bib ab

L2 ANSWER 1 OF 16 USPATFULL on STN
Full Text | Citing References
AN 2005:202160 USPATFULL
TI Absorbent composition with improved odor control
IN Jenkins, Dennis B., Oakland, CA, UNITED STATES
Wheeler, Daniel E., Oakland, CA, UNITED STATES
Fritter, Charles F., Oakland, CA, UNITED STATES
Shenoy, Ananth N., Oakland, CA, UNITED STATES
Deleeuw, David L., Oakland, CA, UNITED STATES
PA THE CLOROX COMPANY (U.S. corporation)
PI US 2005175577 A1 20050811
AI US 2004-773585 A1 20040206 (10)
DT Utility
FS APPLICATION
LREP JOEL J. HAYASHIDA, CORPORATE PATENT COUNSEL, THE CLOROX COMPANY, P.O. BOX 24305, OAKLAND, CA, 94623-1305, US
CLMN Number of Claims: 113
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 1464
AB An absorbent composition with improved odor control and suitable for use as an animal **litter**, comprising an absorbent material, activated alumina, and optional additives.

L2 ANSWER 2 OF 16 USPATFULL on STN
Full Text | Citing References
AN 2005:7754 USPATFULL
TI Composite absorbent particles

IN Fritter, Charles, Oakland, CA, UNITED STATES
Shenoy, Ananth N., Oakland, CA, UNITED STATES
PA THE CLOROX COMPANY (U.S. corporation)
PI US 2005005870 A1 20050113
AI US 2004-861044 A1 20040604 (10)
RLI Continuation-in-part of Ser. No. US 2003-618401, filed on 11 Jul 2003, PENDING Continuation-in-part of Ser. No. US 2004-773585, filed on 6 Feb 2004, PENDING
DT Utility
FS APPLICATION
LREP THE CLOROX COMPANY, 1221 BROADWAY PO BOX 2351, OAKLAND, CA, 94623
CLMN Number of Claims: 41
ECL Exemplary Claim: 1
DRWN 7 Drawing Page(s)
LN.CNT 1582
AB Composite particles and methods for making the same. An absorbent material is formed into a particle. An optional performance-enhancing active is coupled to the absorbent material before, during, or after the particle-forming process, homogeneously and/or in layers. Additionally, the composite absorbent particle may include a core material. Preferred methods for creating the absorbent particles include a pan agglomeration process, a high shear agglomeration process, a low shear agglomeration process, a high pressure agglomeration process, a low pressure agglomeration process, a rotary drum agglomeration process, a mix muller process, a roll press compaction process, a pin mixer process, a batch tumble blending mixer process, an extrusion process, and a fluid bed process.

L2 ANSWER 3 OF 16 USPATFULL on STN

Full Text | Claims | References

AN 2005:7753 USPATFULL
TI Composite absorbent particles
IN Fritter, Charles F., Oakland, CA, UNITED STATES
Shenoy, Ananth N., Oakland, CA, UNITED STATES
Wallis, Kevin P., Oakland, CA, UNITED STATES
Blondeau, Sarah P., Oakland, CA, UNITED STATES
Ochylski, Ryan M., Oakland, CA, UNITED STATES
Jenkins, Dennis, Oakland, CA, UNITED STATES
PA THE CLOROX COMPANY (U.S. corporation)
PI US 2005005869 A1 20050113
AI US 2003-618401 A1 20030711 (10)
DT Utility
FS APPLICATION
LREP THE CLOROX COMPANY, 1221 BROADWAY PO BOX 2351, OAKLAND, CA, 94623
CLMN Number of Claims: 83
ECL Exemplary Claim: 1
DRWN 7 Drawing Page(s)
LN.CNT 1323
AB Composite particles and methods for making the same. An absorbent material is formed into a particle. An optional performance-enhancing active is coupled to the absorbent material before, during, or after the particle-forming process, homogeneously and/or in layers. Additionally, the composite absorbent particle may include a core material. Preferred methods for creating the absorbent particles include a pan agglomeration process, a high shear agglomeration process, a low shear agglomeration process, a high pressure agglomeration process, a low pressure

agglomeration process, a rotary drum agglomeration process, a mix muller process, a roll press compaction process, a pin mixer process, a batch tumble blending mixer process, an extrusion process, and a fluid bed process.

L2 ANSWER 4 OF 16 USPATFULL on STN

Full Text | Citing References

AN 2004:35281 USPATFULL
TI Silica gel based animal **litter**
IN Lee, Roger V., Fremont, CA, UNITED STATES
Fritter, Charles F., Dublin, CA, UNITED STATES
Jenkins, Dennis B., Brentwood, CA, UNITED STATES
Shenoy, Ananth N., San Ramon, CA, UNITED STATES
Hernlem, Ramesh, Martinez, CA, UNITED STATES
PI US 2004025798 A1 20040212
AI US 2002-215174 A1 20020807 (10)
DT Utility
FS APPLICATION
LREP THE CLOROX COMPANY, P.O. Box 24305, Oakland, CA, 94623-1305
CLMN Number of Claims: 59
ECL Exemplary Claim: 1
DRWN 2 Drawing Page(s)
LN.CNT 806
AB A **litter** composition comprising a substantially particulate primary absorbent material and a binding agent, the binding agent comprising approximately 0.01%-40% of the **litter** composition. In one embodiment, the primary absorbent material comprises silica gel and the binding agent comprises a galactomannan. In additional embodiments, the **litter** composition also includes at least one of the following components: fixing agent, colorant agent, anti-bacterial agent, fragrance and/or supplemental absorbent material.

L2 ANSWER 5 OF 16 USPATFULL on STN

Full Text | Citing References

AN 2001:46139 USPATFULL
TI Seeding treatments
IN Madigan, Daniel Paul, Green Bay, WI, United States
Krysiak, Michael Dennis, Green Bay, WI, United States
Eichhorn, Ronald Dean, Green Bay, WI, United States
Wesenberg, Glen H., Green Bay, WI, United States
PA Encap, LLC, Green Bay, WI, United States (U.S. corporation)
PI US 6209259 B1 20010403
AI US 1998-113254 19980710 (9)
PRAI US 1997-52287P 19970711 (60)
DT Utility
FS Granted
EXNAM Primary Examiner: Campbell, Bruce R.; Assistant Examiner: Grunberg, Anne Marie
LREP Weiss, Esq., Philip M.Weiss and Weiss PC
CLMN Number of Claims: 14
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 1609
AB This invention pertains to combination seed capsules wherein each seed capsule includes both moieties of at least one soil conditioner and at

least one seed, and optionally, one or more inorganic chemical fertilizer, growth enhancer, binder, and/or anti-fungal agent. The combination seed capsules are made by physically combining the respective soil conditioner and seed with one other, in the absence of any requirement for chemical reactions in the process of so combining the respective materials. The combination seed capsules provide cooperative and beneficial effects of the soil conditioner and the optional inorganic fertilizer, working together in controlled intimate relation with the seed, to enhance the germination and growth processes of the seed, and the plant emergent therefrom, greater than when the soil conditioner and seed, and optionally inorganic chemical fertilizer, are applied to the soil separately; the improvement being a result of the intimate relationship of the respective materials in the combination seed capsule, whereby the respective materials cooperate with each other in support of germination and plant growth.

L2 ANSWER 6 OF 16 PROMT COPYRIGHT 2005 Gale Group on STN

Full Text

AN 2001:364685 PROMT
TI More liquid ingredients available for poultry use.(Statistical Data Included)
AU HOOGE, DANNY
SO Feedstuffs, (2 Oct 2000) Vol. 72, No. 41, pp. 12.
ISSN: 0014-9624.
PB Miller Publishing Company, Inc.
DT Newsletter
LA English
WC 5243
FULL TEXT IS AVAILABLE IN THE ALL FORMAT
AB ABSTRACT
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L2 ANSWER 7 OF 16 USPATFULL on STN

Full Text | Citing References

AN 94:35205 USPATFULL
TI Modified native starch base binder for pelletizing mineral material
IN Dingeman, David L., Duluth, MN, United States
Skagerberg, William E., Cloquet, MN, United States
PA Oriox Technologies, Inc., Duluth, MN, United States (U.S. corporation)
PI US 5306327 19940426
AI US 1992-852269 19920519 (7)
WO 1990-US5466 19900926
19920519 PCT 371 date
19920519 PCT 102(e) date
DT Utility
FS Granted
EXNAM Primary Examiner: Rosenberg, Peter D.
LREP Merchant, Gould, Smith, Edell, Welter & Schmidt
CLMN Number of Claims: 39
ECL Exemplary Claim: 1
DRWN 2 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 1496

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A binder for pelletizing particulate mineral material. The binder including about 30-99.5% modified native starch, and about 0.2-80% of water-dispersible polymer material selected from the group consisting of water-dispersible natural gums, water-dispersible pectins, water-dispersible starch derivatives, water-dispersible cellulose derivatives, water-dispersible vinyl polymers, water-dispersible acrylic polymers and mixtures thereof. Alternate embodiments include from about 0.5-50% lignosulfonates and/or about 0.2-40% soda ash. Mineral ore concentrate is also disclosed as are mineral ore and iron ore pellets. In addition, methods of binding particulate mineral material and of making mineral ore pellets are also disclosed.

L2 ANSWER 8 OF 16 USPATFULL on STN

Full Text | Citing References

AN 93:60902 USPATFULL

TI Stable agrochemical compositions including alpha-unsaturated amine derivative and acid incorporated into a carrier

IN Gotou, Yukio, Tsukuba, Japan
Sawamura, Masatoshi, Tsukuba, Japan
Okauchi, Tetsuo, Osaka, Japan

PA Takeda Chemical Industries, Ltd., Osaka, Japan (non-U.S. corporation)

PI US 5230893 19930727

AI US 1991-811651 19911223 (7)

PRAI JP 1990-409322 19901228

DT Utility

FS Granted

EXNAM Primary Examiner: Page, Thurman K.; Assistant Examiner: Levy, Neil

LREP Wegner, Cantor, Mueller & Player

CLMN Number of Claims: 10

ECL Exemplary Claim: 1

DRWN No Drawings

LN.CNT 1750

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Stable agrochemical compositions are provided by incorporating at least one of the α-unsaturated amine derivatives having the following formula: ##STR1## wherein one of X^1 and X^2 is an electron attracting group and the other is hydrogen or an electron attracting group; R^1 is a group attached through a nitrogen atom; R^2 is hydrogen or a group attached through a carbon, nitrogen, or oxygen atom; n is an integer of 0, 1, or 2; and A is a substituted or unsubstituted heterocyclic group or a substituted or unsubstituted cyclic hydrocarbon group; and salts thereof, into an agrochemically acceptable solid carrier (clay minerals capable of adsorption (including fuller's earth, terra alba, bentonite, and activated fuller's earth), zeolite, activated charcoal, and β-cyclodextrin, etc.) under a pH 5.5 or less condition. The agrochemical (pesticidal) compositions exert potent shelf life and light-resistance.

L2 ANSWER 9 OF 16 USPATFULL on STN

Full Text | Citing References

AN 92:67791 USPATFULL

TI Fertilizer processes and compositions using s-triazines

IN Freepons, Donald E., Kennewick, WA, United States

PA Melamine Chemicals, Inc., Donaldsonville, LA, United States (U.S.

corporation)
PI US 5139555 19920818
AI US 1985-777455 19850918 (6)
RLI Division of Ser. No. US 1983-552024, filed on 17 Nov 1983, now patented, Pat. No. US 4559075, issued on 17 Dec 1985 which is a continuation of Ser. No. US 1981-305394, filed on 25 Sep 1981, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Lander, Ferris
LREP Breiner & Breiner
CLMN Number of Claims: 18
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1830
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Process of furnishing slow release nitrogen to field soil comprising inserting and distributing in the soil in particulate or granular form melamine, ammeline, ammelide, cyanuric acid, mixtures thereof, their salts, and mixtures thereof.

L2 ANSWER 10 OF 16 CABA COPYRIGHT 2005 CABI on STN
Full Text | Cited References
AN 91:138792 CABA
DN 19910308888
TI Upgrading, before casing, with products based on feather meal mixed with binding agents and treated with formaldehyde
Aufwerten vor dem Decken mit Produkten auf der Basis Federmehl mit Bindemitteln gekrumelt und mit Formaldehyd behandelt
AU Overstijns, A.
CS Provinciaal Centrum voor Land- en Tuinbouw, 8810 Beitem-Roeselare (Rumbeke), Belgium.
SO Champignon, (1990) No. 341, pp. 34-39.
ISSN: 0009-1308
DT Journal
LA German
ED Entered STN: 19941101
Last Updated on STN: 19941101
AB Feather meal (1 kg/m[sup2]) treated in various ways, was mixed with pasteurized horse **manure** compost (90 kg/m[sup2]) and its effect on 4 mushroom cultivars (Le Lion X1, Somycel S9, Le Lion X20 and Somycel 205) was studied. Treatments consisted of hydrolysed or scarcely hydrolysed feather meal with **lignin sulphonate** as a **binder**, with or without fine sawdust as a supplementary binder, and formaldehyde. In all treatments, feather meal increased the overall yield by 4.0-6.5 kg/m[sup2] compared with unamended compost, although individual mushroom weights (mean 11.5 g) were not increased. Formaldehyde treatment offered no significant advantages and gave a crumblier substrate. Hydrolysis gave the feather meal an unpleasant smell. Adding sawdust binder increased yields by 0.8-1.8 kg/m[sup2] compared with compost amended with feather meal and lignin sulphonate.

L2 ANSWER 11 OF 16 USPATFULL on STN
Full Text | Cited References
AN 89:40777 USPATFULL
TI Fertilizer compositions, processes of making them, and pocesses of using

them
IN Allan, G. Graham, Seattle, WA, United States
Freepons, Donald E., Kennewick, WA, United States
Crews, George M., Baton Rouge, LA, United States
PA Melamine Chemicals, Inc., Donaldsonville, LA, United States (U.S. corporation)
PI US 4832728 19890523
AI US 1985-777294 19850918 (6)
DCD 20021119
RLI Division of Ser. No. US 1983-552023, filed on 17 Nov 1983, now patented, Pat. No. US 4560400, issued on 24 Dec 1985 Continuation of Ser. No. US 1981-305603, filed on 25 Sep 1981, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Lander, Ferris H.
LREP Breiner, A. W.
CLMN Number of Claims: 27
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1524
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Relates to a fertilizer product in granular form, to processes for making and using it. The granules have strength, sizes and weights suitable for mechanical dispensing and application to and into the soil. These granules combine particles of a nitrogen source of poor solubility in pH 7 water at 20° C., that converts slowly to a useful form, together with a binder that holds these fine particles together.

L2 ANSWER 12 OF 16 PROMT COPYRIGHT 2005 Gale Group on STN
Full Text

AN 87:149406 PROMT
TI Plant uses peat to produce feed products.
SO FEEDSTUFFS, (15 Jun 1987) pp. 3.
LA English
AB Northern Resource Conversion has built a $2.9mil, 80,000 tons per year feed ingredient plant in N Branch, Minnesota, that uses peat as the raw material. Poultry liter, an ingredient carrier and a pellet binder are being produced at the plant. Extruded rolls of peat are turned and dried until they are at 35% moisture in Minnesota, then trucked to N Branch where the peat is fractured and separated by sizes. Some fines are used for poultry **litter**, while others are used as a feedstock for the drying plant. The peat is dried to 15% moisture and manufactured into a carrier to mix with liquids, including a dried molasses product produced by the company. Dried peat can also be mixed with calcium **lignin sulfonate** to be used as a pellet **binder** or sold for other industrial carrier uses.

L2 ANSWER 13 OF 16 USPATFULL on STN
Full Text | Citing References

AN 85:74970 USPATFULL
TI Fertilizer compositions, processes of making them and processes of using them
IN Allan, G. Graham, Seattle, WA, United States
Freepons, Donald E., Kennewick, WA, United States
Crews, George M., Baton Rouge, LA, United States

PA Melamine Chemicals, Inc., Donaldsonville, LA, United States (U.S. corporation)
PI US 4560400 19851224
AI US 1983-552023 19831117 (6)
DCD 20021119
RLI Continuation of Ser. No. US 1981-305603, filed on 25 Sep 1981, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Schor, Kenneth M.
LREP Venne, Vernon F., Picken, Mary E., Robbins, Frank E.
CLMN Number of Claims: 5
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1439
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Relates to a fertilizer product in granular form, to processes for making and using it. The granules have strength, sizes and weights suitable for mechanical dispensing and application to and into the soil. These granules combine particles of a nitrogen source of poor solubility in pH 7 water at 20° C., that converts slowly to a useful form, together with a binder that holds these fine particles together.

L2 ANSWER 14 OF 16 USPATFULL on STN
Full Text Citing References
AN 85:73537 USPATFULL
TI Fertilizer processes and compositions using s-triazines
IN Freepons, Donald E., Kennewick, WA, United States
PA Melamine Chemicals, Inc., Donaldsonville, LA, United States (U.S. corporation)
PI US 4559075 19851217
AI US 1983-552024 19831117 (6)
DCD 20021119
RLI Continuation of Ser. No. US 1981-305394, filed on 25 Sep 1981, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Schor, Kenneth M.
LREP Venne, Vernon F., Picken, Mary E., Robbins, Frank E.
CLMN Number of Claims: 6
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1787
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Process of furnishing slow release nitrogen to field soil comprising inserting and distributing the soil in particulate or granular form melamine, ammeline, ammelide, cyanuric acid, mixtures thereof, their salts, and mixtures thereof.

L2 ANSWER 15 OF 16 USPATFULL on STN
Full Text Citing References
AN 85:68052 USPATFULL
TI Fertilizer processes and compositions using s-triazines
IN Freepons, Donald E., Kennewick, WA, United States
PA Melamine Chemicals, Inc., Donaldsonville, LA, United States (U.S.

corporation)
PI US 4554003 19851119
AI US 1983-483383 19830408 (6)
RLI Division of Ser. No. US 1981-305394, filed on 25 Sep 1981, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Schor, Kenneth M.
LREP Venne, Vernon F., Picken, Mary E., Robbins, Frank E.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1771
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Process of furnishing slow release nitrogen to field soil comprising inserting and distributing in the soil in particulate or granular form melamine, ammeline, ammelide, cyanuric acid, mixtures thereof, their salts, and mixtures thereof.

L2 ANSWER 16 OF 16 USPATFULL on STN
Full Text Citing References
AN 83:42398 USPATFULL
TI Elimination of odors from waste material
IN Thomas, II, Johnny M., Fort Collins, CO, United States
Mommer, Richard P., Loveland, CO, United States
PA Uniscope, Inc., Johnstown, CO, United States (U.S. corporation)
PI US 4405354 19830920
AI US 1980-136553 19800402 (6)
DT Utility
FS Granted
EXNAM Primary Examiner: Lander, Ferris H.
LREP Lackenbach, Siegel, Marzullo, Presta & Aronson
CLMN Number of Claims: 24
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 440
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A method and composition for the elimination and control of ammonia odor from organic waste materials by contacting the waste material with a composition containing a deodorizing agent which produces a non-odorous ammonia salt, thereby eliminating gaseous ammonia from escaping into the air. The present invention also eliminates additional odors resulting from putrefaction due to ammonia fixing bacteria.

AN 2001:364685 PROMT
TI More liquid ingredients available for poultry use.(Statistical Data Included)
AU HOOGE, DANNY
SO Feedstuffs, (2 Oct 2000) Vol. 72, No. 41, pp. 12.
ISSN: 0014-9624.
PB Miller Publishing Company, Inc.
DT Newsletter
LA English
WC 5243
TX ABSTRACT

In the last 20 years, the availability of liquid ingredients for poultry feeds has increased. These products offer several benefits, including higher nutrient availability, greater formulation flexibility and improved pelleting performance.

Although liquid diets have not replaced dry feeds, the number and availability of liquid ingredients for poultry feeds has sharply increased. Most strides have been made in the last 20 years because in the early 1980s, the use of liquids in feed manufacturing was virtually nonexistent. Today, most feed batches include a "dry cycle" and a "wet cycle" for adding ingredients. There are several advantages to the use of liquid versus dry ingredients, including:

* Higher nutrient bioavailability -- water soluble nutrients appear to be more easily utilized and/or exhibit higher potency at equivalent intake levels than non-water soluble forms (for example, water dispersible versus fat-soluble vitamins; amino acid versus natural proteins);

* Greater formulation flexibility (liquid ingredient may be more pure without additional nutrients, such as phosphorus without calcium);

* Some liquids add lubricity to pelleted feeds, which improves pelleting performance and allows greater throughput at the pellet mill with lower electrical power requirements (for example, water or methionine hydroxy analogue);

* Better inventory management (for example, ultra-sonic level sensors in tanks) and liquid systems more easily accommodate increases in mill size and capacity;

* Convenience (labor reduction versus bagged ingredients);

* Dust control (generally more environmentally friendly, cleaner mills, less employee health risk from airborne dust, less product loss, fewer spills);

* Less nutrient segregation and lower mixing coefficients of variation in complete feed;

* Permits choice of application at the main mixer, special continuous mixers or post-pelleting (many liquid ingredients are unaffected by severe steam heat and pressure of expanding and/or pelleting -- for example, methionine hydroxy analogue, choline chloride -- but others are heat labile);

* "Logistical advantages" -- relatively easy transport of liquids within a mill using a pump for pressure and piping from the tank to the destination, and

* Reliable liquid application, systems ensure smooth, continuous operations and minimize the human error factor (Muirhead, 1999; Vandenberg, 1999).

Disadvantages of liquid ingredients must also be considered. Ingredients can be more accurately weighed in dry form than metered in liquid form. Inaccuracy is a problem when liquids are added on a volumetric basis "on-the fly" to a product stream because either the volume of dry material

or liquid may vary while the other remains constant. The answer to this dilemma is to weigh both the feed and liquid ingredient and fix the output of one (probably the auger, mixer, or about 2-inch thick flat stream of dry material) to control the other (liquid addition).

Liquids such as fats and molasses tend to vary in composition, especially from different suppliers, whereas those such as methionine hydroxy analogue or other amino acids, choline chloride or ethoxyguin tend to be very consistent. The corrosiveness of liquids can be high so care must be taken to use the right materials for liquid systems. Manufacturers sometimes have to add buffers to liquid ingredients to prevent corrosion of equipment or to maintain nutrient stability. In the case of vitamins in a low (less than 4.0) pH solution containing phosphoric acid, the shelf life is estimated to be about 60-90 days.

Solidification or crystallization at low temperatures can cause plugging of pipes, and at times pipes may require heating to unplug them. Mixing liquid enzymes with water can cause a physical reaction that plugs up nozzles. Fats and molasses may also gum up nozzles and handling equipment if applied incorrectly, although roto-coaters have the advantage of having no nozzles.

Too much fat or watery liquid can adversely affect pellet quality, and small deficiencies of some liquids with low inclusion rates may adversely affect poultry performance. Liquids containing enzymes or direct-fed microbials usually must be added after pelleting to maintain viability although some products have been developed which retain high viabilities of as much as 60-97% through steam pelleting. Expanding is more severe, however, and one direct-fed microbial product with 97% viability through pelleting exhibited only a 3% survival rate through an expander at a commercial poultry feed mill.

Each liquid must have its own piping and metering in order to be added to the mix or sprayed onto feed. Liquids must not continue to run or drip out of the pipe after dosing or to solidify in the pipe. This can be prevented if the dosing pipe is emptied after each batch by blowing it with air. Leaks and spills, though usually infrequent with liquids, can be disastrous as liquids tend to run everywhere and can cause damage in electrical switch boxes and control rooms. Damage can be minimized if provisions are made for regular preventive maintenance and for dikes around storage tanks to contains leaks or spills.

A problem when adding liquids to a mixer is that crusts can form on the wall of the mixer and large lumps can form on the shaft of the mixing ribbon. These problems can be prevented by spraying only on places where mash is available, but this is sometimes a problem when batch sizes are about half or so of mixer capacity and crusts usually form.

Viscous liquids like molasses are not well mixed because little lumps form, and higher inclusion rates (for example, 4% or more) only multiply the problem. This also causes an increase in cross contamination of batches with drugs and additives due to stickiness inside the mixer. A continuous high-speed mixer (1,800 rpm) for adding viscous materials that are economical in a certain area, after the main mixer and in line to the pellet mills, prevents this problem. For best pellet quality, fat should be sprayed on after cooling and sieving of the pellets, otherwise moisture has difficulty escaping from fat-coated pellets during cooling. The fat

must have time to be absorbed and allowed to solidify on the pellets. A screw conveyor with a slightly heated trough is sometimes used for this purpose.

Ingredients list

Following is a list of some of the most commonly used ingredients in liquid form:

Animal fats and vegetable oils. Feed grade fats are probably the most commonly used liquid ingredients and usually require some heating prior to application. Fats can gum up handling equipment, especially at low temperatures. It is often difficult to get flow rates high enough not to act as a brake or bottleneck to productivity. Liquid fats can affect pellet quality if too much is applied in the mixer. Expanding or post-mix grinding allow the use of more feed components such as fats and oils that typically reduce pellet durability indexes (PDIs) while eliminating the need for additives such as pellet binders to improve pellet durability. Expanders also permit more fat to be added at the mixer, eliminating the need to spray fat on the outside of pellets (Beyer, 2000).

Types of lipids used are primarily animal (including poultry) or animal-vegetable blends as sources of concentrated energy, fatty acids (essential such as linoleic acid or nonessential) or lecithins. Pesticide scan reports from fat or oil suppliers prevent potential residue problems in meat or eggs. Fats are especially useful for increasing dietary energy contents, a very favorable benefit, particularly in hot weather by lowering the bird's heat increment following a feeding. Corn or soybean lecithins can have the consistency of axle grease when cold and can be somewhat difficult to handle but function as emulsifiers and provide choline as well as energy. Fat-soluble vitamins A, D, E and K are dependent on dietary fats as their carrier substances. To some extent, fats interfere with calcium metabolism, forming calcium soaps by saponification, but in layer feeds the normal maximum level of fat addition is only about 3%. Feed ingredients such as extruded soybeans and meat and bone meals have relatively high le vels of fat "built in" to the products and add considerable amounts of liquids to the feeds in these forms. In fact, they are sometimes used at mills that do not have fat tanks to provide extra dietary fat that may be needed.

Dietary lipid supplements provide an "extra-caloric effect" in feeds by slowing intestinal motility or peristaltic action and rate of passage of digesta, improving the efficiency of feed utilization. Dietary crude fiber has an opposite effect of increasing feed passage rate.

Fats and oils have an antimicrobial effect, to some extent like that of growth promoter antibiotics. In mash turkey feeds, addition of fat causes. clumping of particles, reducing the amount of fines, and this feed form has been found to act much like pellets with almost similar results. Dustiness of feed can be reduced with as little as 0.25% added fat. Fats in feeds help lubricate pellet dies for better throughput, but excessive fat reduces PDIs.

Marketing of "designer" poultry meat and eggs with enhanced omega-3 fatty acid contents for human health reasons has resulted in addition of flaxseed oil, menhaden or other fish oils, or fish meals to some poultry diets. These products tend to have higher polyunsaturated fatty acid

contents and should be stabilized with antioxidant and monitored for rancidity. Rancid fats of any kind cause destruction of intestinal villi, reduction in nutrient absorbing capacity and efficiency of feed utilization, and diarrhea (based on field observation).

A higher percentage of restaurant grease in an animal-vegetable fat blend fat may lead to higher MIU (moisture, insolubles, unsaponifiables) and composition problems, especially if non-fat "cooking fats" are included. Saturated fat may be implicated in pulmonary hypertension syndrome (ascites) mortality in broilers and turkeys because fish oil has been shown to reduce male broiler ascites mortality by about half. Fish and flaxseed oils stimulate the immune system, inhibit tumor growth and lower the incidence or severity of Eimeria tenella coccidial infections in the ceca.

Antioxidants. The main purpose of antioxidants is to prevent rancidity or further rancidity in lipid products such as feed fats and oils and animal byproducts such as meat and bone meal, which contain fats (for example, meat and bone meal has about 8.6% fat). Antioxidants are also added to vitamin premixes to protect vitamins from destruction. Vitamins C and E have limited antioxidant abilities. Rancidity causes damage to the villi of the intestinal epithelium, lowering rate of gain, efficiency of feed utilization and processing yield, which is closely related to intestinal health and functioning.

A number of antioxidant products are on the market, but ethoxyquin is considered to be the most effective and widely used. Antioxidants are normally added to the fats, oils, animal byproducts or vitamin premixes directly, and these ingredients containing the antioxidants are then added to complete feed mixes.

Betaine. Betaine is oxidized choline and serves as a methyl donor function. Partial replacement of choline from choline chloride and/or methionine allows betaine to be used to lower the cost of the diet with equal or better performance. Liquid pure betaine or natural betaine products containing other nutrients are available commercially. Lower coccidial lesion scores when used with ionophore coccidiostats, better heat stress resistance and reduced incidence of fecal contamination problems during processing of meat birds have been some of the suggested benefits of betaine.

Choline chloride. Liquid choline chloride (70%) is the most economical concentrated source of choline for addition to poultry feeds. Choline chloride is notably hygroscopic. The chloride content should be considered in feed formulation. Choline is a water-soluble compound and an essential nutrient needed in cell structure, fat metabolism (that is, in lecithin which carries fat; lipotropic factor preventing liver fat accumulation), nerve impulses (acetylcholine) and provision of "biologically labile methyl groups" which are involved in various metabolic pathways and in prevention of perosis (Syntex Agribusiness Inc., 1979). Betaine can be used as a liquid product to supply oxidized choline, the active form, and spare some of the methionine that would have been used for methyl group donation (in layers, about 9% of methionine requirement based on a low choline diet).

Condensed fish solubles. This product has about 51% moisture and adds moisture to a feed. It typically has 31% crude protein and 905 kcal

metabolizable energy (ME)/lb., approximately the same ME as canola meal. Condensed fish solubles has about 4% crude fat and contributes omega-3 fatty acids to the diet. This ingredient has been reported to contain an unidentified factor that improves hatchability. Its relatively high selenium content, 2 ppm (mg/kg), and perhaps in an organic form -- whereas the selenium requirement of poultry is only about 0.3 ppm (mg/kg) in complete feed -- may explain much of the benefit. At 2.5% of the diet, the condensed fish solubles would contribute 0.05 ppm (mg/kg) dietary selenium.

Direct-fed microbials. The term covers a fairly wide range of products, including bacteria, yeast and/or mold additives. They serve various functions, such as one or more of the following:

* A source of live, viable, beneficial bacteria, some of which may be naturally occurring in avian species, for the gut (for example, Enteroccus faecium);

* Designed to stimulate beneficial gastrointestinal microorganisms, improving digestion and feed conversion (coincidentally, the antibiotic bambermycins works in this way against clostridia species to prevent enteritis);

* Host specific microorganisms originating in avian species and being multiplied and provided back to poultry to enhance the intestinal populations;

* Heat stability to survive pelleting (for example, Bacillus subtilis spores or microencapsulated dry microbes), and

* Indirectly provide enzyme activities, such as in the case of Saccharomyces cerevisiae yeast products, which have phosphorus availability improving enzyme(s), as well as stimulating an intestinal general immune response for improved health.

The largest group of commercial direct-fed microbials contains lactic acid-producing bacteria, which are effective in decreasing the populations of certain pathogens. Some of these are very rapidly proliferating species (for example, E. faecium) that are able to overcome some losses in pelleting by a fast recovery to the original population and then achieve much greater numbers. The lactic acid forming bacteria help by reducing production of toxic metabolites such as amines; ammonia and endotoxins that injure the intestinal epithelium and hinder nutrient absorption. Some direct-fed microbials also contain mannan oligosaccharides, vitamins, minerals or other nutrients for the microorganisms and their hosts.

For most effective use of direct-fed microbials, some precautions should be taken. The manufacturer's recommendations should be followed with regard to dosage and compatibility with medications, such as anti-coccidials and antibiotics, high (about 175 ppm) copper from copper sulfate or tribasic copper chloride and other ingredients. It is desirable to administer treatment to young poultry as soon as possible after hatching for maximum benefit. Older growing or adult poultry are sometimes treated with direct-fed microbial containing diets as a preventative or precautionary measure in attempts to restore them to normal health and well being (for example, when there is an unexplained diarrhea and wet droppings) after antibiotic therapy or disease infection. Liquid products

that are not heat stable should be added to mash feeds or either sprayed on or added by dry application post pelleting.

Enzymes. Dietary enzymes augment those of the intestinal tract and have certain specific substrates and activities. Enzymes typically are packaged as powders, granules or liquids. If the enzyme is microencapsulated, the product will likely be in granular form and have about 60-70% or more activity post pelleting depending on the particular product. Liquid enzyme products added to mash feeds or as sprays to feeds after pelleting have essentially 100% activities because they are not exposed to steam heat. As with direct-fed microbials, enzymes are much more susceptible to destruction in expanders and extruders than in steam pellet mills. The main components of most enzymes are protein molecules that are heat-labile and susceptible to modification or destruction, just as liquid egg white is coagulated in a skillet during cooking or in water during boiling. Once the enzyme protein is changed, it may have limited or no ability to perform its previous function as a catalyst for a certain reaction.

Enzymes may be bioengineered using current DNA manipulation techniques ("genetically modified organism") or naturally derived from any number of sources (for example, bacterial, fungal, plant or animal) serving a specific purpose or they may be provided in blends or "cocktails" of enzymes with synergistic effects to improve the performance of poultry. Some enzymes included in poultry supplements include phytases, betaglucanases, xylanases, proteases, alpha-amylases, cellulases, lipases, pectinases, hemicellulases, endoglucanases, beta-mannanases, myloglucosidases and others. Practical uses of dietary enzymes include improvement of feed and caloric efficiency in coarse grain diets (wheat, barley, oats, rye) which tend to have more non-starch polysaccharides, phosphorus bioavailability from natural (phytate bound) sources and reduced **manure** phosphorus contents and energy bioavailability in soybean meal.

Often, amino acids, trace minerals and other nutrients are also released and made more available for absorption by the enzyme supplements. For this reason, some manufacturers offer the equivalent nutrient content of enzyme products as if they contained the nutrient levels they release through catalytic action.

An important point regarding liquid enzyme application is that if the feed is to be screened prior to being transferred to the finished product bins, then it is essential that the enzymes be applied post screening (that is, to clean pellets after fines are removed).

Screening of pellets is desirable. If liquid enzyme is sprayed onto unscreened pellets, research has shown that almost 30% of the enzyme activity can return with the fines for repelleting. This enzyme in the fines is nearly all destroyed by steam heat during repelleting, proving to be a very uneconomical practice (Steen, 1998).

Flavors. Poultry are known to have the ability to taste and to distinguish some flavors such as sweetness (preference for sucrose and rejection of saccharine), acidity, saltiness (young chicks avoid 1.9% saline solutions), sourness and bitterness (high-tannin milo). The reaction to flavors in experiments has been modified by the simultaneously offered alternatives. When sucrose and dextrose are offered, chickens are indifferent. Honey and strawberry flavors are rejected. Butter-type

flavors receive a variable degree of preference. Poultry responses to a variety of sweet and bitter flavors suggest that the broad classifications of taste recognized by humans are not applicable to the fowl. Interestingly, a commercial flavor product containing sodium saccharine and artificial flavor components for feed addition has been shown to improve bodyweight and feed conversion of broilers and turkeys.

Feed consumption is regulated by physical (volume receptors), physiological (hormone nerve receptors) and taste factors (appearance and palatability). The ability to taste may not be uniformly present in all chickens because a few birds have been observed to be "taste blind" in a flavor trial. A flavor may be offensive, have no effect or increase feed or fluid intake (Ewing, 1963). In chick drinking water trials, consumption of solutions were stimulated with ethyl butyrate plus other esters, phenylacetic acid plus other organic acids, juniper oil plus other oils, diacetyl or maltol, but weight gains were not affected (Deyoe et al., 1961). When flavors were added to feed, small, but consistent, improvements in feed conversion ratios were observed. Extractives of anise, rose, cinnamon, lemon or orris and artificial flavors of strawberry, anise and grape have been reported to be ineffectual in feeds. True sugars such as sucrose, fructose and maltose in water are clearly preferred over plain water. These choices do not appear to be related to the caloric contents of the flavors (Ewing, 1963). Some commercial flavors are advertised to be heat stable through pelleting and extrusion. Flavors have a much wider market in pet foods, baby pig feeds and dairy and equine rations than in poultry feeds. Citric acid in poultry feed is a preferred flavor (Gentle, 1971).

Liquid streptomyces solubles (LSS). This ingredient is a byproduct of a fermentation process to produce the antibiotic erythromycin. LSS must be treated prior to commercial sale to eliminate the residual Erythromycin activity. In spite of this, LSS exhibits growth promotion and feed conversion improving effects in poultry and reduces the weight of the intestinal tract as a percent of bodyweight. This "gut thinning" effect is characteristic of several antibiotics. No performance claims are made for the product, and its use in combination with antibiotics and anticoccidials is unrestricted.

The use level in commercial broiler diets is about 0.75% or 15 lb. per ton. There are several liquid antimicrobial solutions made for injection into individual birds or for adding to drinking water of poultry, but antibiotics and coccidiostats have historically not been added, as liquid ingredients to poultry feeds.

Lysine. Because of its chloride content, liquid L-lysine hydrochloride may sometimes be self-limiting in a commercial poultry diet. Chloride is a required nutrient but at higher levels begins to be excreted with sodium, and thus pulls water through the birds' increasing water consumption and **manure** and **litter** moisture. Excess chloride may increase the incidence of leg and bone problems in growing birds, depress feed intake and reduce egg shell quality in layers and breeders.

Methionine. Liquid methionine hydroxy analog is not an amino acid but can become such by having an amino group added naturally through a metabolic pathway inside the bird. With 88% minimum active ingredient, the liquid analog products have 12% moisture. They provide lubricity to feeds, lowering electrical energy usage and increasing pellet mill throughput.

Their acidity provides some mold inhibitor action, estimated to be about one fourth of that of propionic acid on a weight basis. Price and service are other important considerations in determining which liquid methionine or methionine activity supplement to purchase.

Molasses. Molasses products are primarily byproducts of the sugar refining industry, where either sugar beets or sugar cane are used as the raw material, but citrus, corn starch, sorghum and wood molasses are also available. The typical moisture content of these products is about 22.5-34% (66-78.5% dry matter), depending on the type of molasses. The molasses available for poultry feeding is called final or blackstrap molasses, which has all or most of the sugar removed for human consumption.

Molasses is only used extensively in poultry feeds in areas close to sugar refineries. Depending on local conditions, high-test and types A and B molasses are sometimes also available. The high-test product is basically unrefined beet or cane juice that has had its sugars inverted to prevent crystallization. Type A and B molasses are intermediate to final molasses.

Because of the water content and sugar removal, molasses products normally are relatively low in energy (for example, liquid beet or cane molasses has about 900 kcal ME/lb.). The energy level decreases as more and more sugar is extracted. Molasses is usually quantified with a Brix number, measured in degrees, and these numbers relate very closely to the sucrose concentration in the product. Both beet and cane molasses contain about 46-48% sugar (Leeson and Summers, 1997).

Although molasses has relatively low energy and protein, it can be used to reduce the dustiness of feed and to stimulate appetite. Because of its high potassium content (2.3-4.8%) as a plant derived material, it can be useful in poultry feeds, which have lower soybean meal, and therefore lower potassium, due to high soybean meal prices or substitution with animal byproducts that have lower potassium contents. Excessive molasses in the diet can have a laxative effect and cause wet **litter** as a result of potassium stimulating water intake. Most poultry are able to perform well on balanced diets containing up to 20% molasses, but inclusion levels much above 4% will likely result in increased water intake and **manure** wetness (Leeson and Summers, 1997).

Mold inhibitors and organic acids. Propionic acid is perhaps the most widely used mold inhibitor, but acetic, benzoic, butyric, formic, fumaric, lactic and/or sorbic acids are sometimes also included. Propylene glycol is sometimes added to mold inhibitors, and a level of 10% or more in aqueous solution has been shown to be required to suppress microbial growth. It is also a nontoxic antifreeze that prevents the mold inhibitor from freezing. Although expensive, propylene glycol is considered important in mold inhibitors, and it also has a sweet taste, increasing palatability of feeds, high energy (2,585 kcal ME/lb.), reduces the corrosiveness of propionic acid and functions as a surfactant to reduce dustiness and increase adherence of mold inhibitors to feed. Depending on the level used, mold inhibitors exhibit some degrees of effectiveness against bacteria including pathogens in feeds.

It has been reported that a high level of 1% dietary propionic acid can completely inhibit hatchability of eggs from breeders. A few mold

inhibitors contain deliquescents to help control moisture migration within feed bags or bins. Moisture migration due to daily temperature variations can lead to moisture accumulation in certain areas that become hot spots for mold activity and feed spoilage. Organic acids have been used to some extent, in Europe primarily, as an alternative to some of the low level antibiotics banned as growth promoters in poultry feeds.

Pellet **binders**. **Lignin sulfonate** pellet **binders** are byproducts of the paper milling industry. It is preferable to first try to utilize mechanical methods, such as proper particle grind size, pellet mill steam amount and temperature, die size and length and wheat or wheat byproducts, to achieve desired pellet quality. If these efforts are not completely satisfactory, pellet binders should be considered. Feed conversion ratios can improve substantially whenever high quality pellets are compared with poor quality pellets or mash feeds (too high levels of fines). With turkeys, for example, it is possible to lose as much as 20 points (0.20 lb. more feed/lb. live weight) or more with high fines versus low fines feeds. In broiler strains susceptible to cold and/or altitude stress for ascites, better pellet quality can raise the level of growth of a flock and increase ascites mortality. Dry pellet binders are the physical form most often used in poultry feeds.

Phosphate supplements. Regular dry inorganic phosphate supplements are less expensive and widely used in poultry feeds, but phosphoric acid and ammonium polyphosphate could be used in the future in liquid vitamin and trace mineral premixes. Improved bioavailabilty of phosphate and lower levels of inclusion and lower phosphorus levels in **manure** may be benefits receiving future consideration. In mink and fox wet paste feeds in summer, it is common to include phosphoric acid as a phosphorus source and preservative.

Pigments. Adding carotenoids (xanthophylls) to broiler chicken diets for golden shank and creamy yellow skin color and to caged laying hen feeds for yolk color can be done with liquid pigment products. Turkeys have a white skin color and do not respond to pigment in feeds.

Surfactants. Surfactants are compounds added to molasses, fats or oils to reduce surface tension and viscosity, to improve flowability, spreadability and penetrating power, to lower temperatures at which molasses and fats can be used and to prevent or minimize balling, caking, lumping, feed compaction, and bridging and to require less electrical power to run equipment. Dust control surfactants added to soybean oil or other oils also help solve the problem of dusty diets such as low energy, high tapioca laying feeds in foreign countries by reducing the surface tension and spread of the oils on feed particles.

Vitamins and trace minerals. A few liquid vitamin and trace mineral premixes for inclusion in feeds have been offered commercially but have not been accepted to any great extent to date. Vitamins differ in their optimal pH ranges and trade minerals, especially copper and iron, can cause destruction of some of the vitamin activity, so it is difficult to achieve one perfect liquid vitamin and trace mineral premix. Other liquid ingredients such as phosphoric acid have sometimes been incorporated. The water dispersible and water soluble forms of vitamins and trace minerals, although usually more expensive, have higher bioavailabilities.

Water. Last, but not least, in importance is to consider water addition

to poultry feeds. The drier feeds are, the more cost effective it is to haul them and the better feed conversion should be obtained per unit of feed. In practice, it is possible to add moisture, a very low cost liquid ingredient, to achieve a total level of about 16% in poultry feeds for normal performance. Limited research with high moisture, wet mash types of diets made fresh for poultry have shown some benefits. Adding moisture to a level higher than 16% moisture leads to more rapid spoilage.

Water is routinely added to mash forms of feeds during steam conditioning prior to pelleting. It adds lubricity and allows the feed to more easily be formed into pellets. Water dilutes the feed but, apparently, up to the point where excessive moisture accelerates feed spoilage, contributes to better solids component utilization by poultry (Beyer, 2000).

Several other liquid or wet feed ingredients are locally available in different areas of the country. Some of these include potato waste wet, brewers solubles, corn steep liquor (protein and phosphorus), soy solubles (byproduct of isolated soy protein manufacture). and whey permeates (lactose and minerals) from cheese production.

Delivery mix-ups

With different types of liquid methionine supplements containing either methionine hydroxy analogue or sodium methionine, it is possible for delivery mix-ups to occur and for these different products to become commingled in the same storage tank by accident.

This should not be done because the products are chemically different and need to be stored separately. Choline has sometimes also been wrongly delivered to a liquid methionine tank, or vice versa, or to the fat tank. This can get expensive as the company delivering the products is usually at fault and held responsible for removing the mixed products. In one case of choline being delivered to the fat tank at a layer feed mill, some formulas received 2.5% added "fat," and the resulting excessive choline intake by the hens caused "fishy flavor" in the eggs. Customers complained, and a large volume of egg inventory had to be returned to the producer for disposal.

Color coding each ingredient tank and hookups has been suggested as one method to reduce the incidence of mistakes.

Feed assays

As with dry ingredients, lab assays are necessary to validate the levels of the desired nutrients and their coefficients of variation when using liquid ingredients for poultry feeds.

Liquid meters and scales have to be calibrated as part of regular preventive maintenance and quality assurance programs.

Dr. Danny M. Hooge, Hooge Consulting Service Inc., Eagle Mountain, Utah, presented this paper at the American Feed Industry Assn. Liquid Feed Symposium held in Omaha, Neb., Sept. 11-13.

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Steen, P. 1998. Application of enzymes, both granular and liquid, in the feed manufacturing process. Proc. Arkansas Nutr. Conf., pp. 133-149.

Syntex Agribusiness Inc. 1979. Choline: its applications in medicine and nutrition. Springfield, Mo. 60 pp.

Vandenberg, M.J. 1999. Letter to the editor: Reader details advantages of using liquid ingredients. Feedstuffs 71(13):8, 14.

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CT *PC2048101 Complete Poultry Feeds
CC *EC310 Science & research
ICL *AGRI Agriculture, Fishing and Tobacco
NAIC *311119 Other Animal Food Manufacturing
GT *CC1USA United States

AN 95:205953 CABA
DN 19950316218
TI Screening of various substrates for mushroom spawn preparation
AU Ajay Singh; Saini, L. C.; Singh, A.
CS Department of Plant Pathology, CCS Haryana Agricultural University, Hisar 125 004, India.
SO Haryana Agricultural University Journal of Research, (1994) Vol. 24, No. 2/3, pp. 107-110. 3 ref.
ISSN: 0379-4008
DT Journal
LA English
ED Entered STN: 19951219
Last Updated on STN: 19951219
AB Spawn for mushroom (Agaricus bisporus) production was prepared on wheat grains and bajra [Pennisetum glaucum] grains and on various agricultural wastes, namely paddy husk, paddy straw, wheat straw, sawdust, cotton **waste**, gram [Vigna] husk, **poultry manure** and sugarcane bagasse, that had been soaked in water and mixed with **calcium carbonate**. Mycelium

growth was best on the cereal grains but gram husk, sugarcane bagasse and wheat straw gave promising results. Subsequent production of mushrooms was highest from spawn prepared on gram husk and sugarcane bagasse (15.20 and 14.86 kg/100 kg compost, respectively).

L3 ANSWER 2 OF 13 CABA COPYRIGHT 2005 CABI on STN

Full Text | Citing References

AN 86:71012 CABA
DN 19861905925
TI Clay-breaking and fertilizing composition and method of breaking and fertilizing heavy and compacted soils
AU McKenzie, D. L.
CS 26 Rivermead, Cullompton, Devon, UK.
PI 19860000
SO United States Patent, No. 4,563,207, pp. 6. Issued Jan. 7, 1986. Applied Sept. 21, 1983.
DT Patent
LA English
ED Entered STN: 19941101
Last Updated on STN: 19941101
AB A clay-breaking and fertilizing composition consists essentially of an intimate mixture of 20-60 wt % dried protein-rich manure, 6-35 wt % of a water-soluble potassium compound, and 20-60 wt % of a combination of basic phosphate and **calcium carbonate** in a wt ratio of 1:4. Preferably the **manure** is **chicken manure** and the calcium compound is potassium chloride. When spread on heavy, clay soils or compacted ground and watered, the composition breaks up the soil and fertilizes it such that, after two to three months the soil is friable and ready for crop cultivation. The composition is also usable in a stratified cultivation bed, comprising an impermeable tank, a bottom layer of wood or stone chippings which can be supplied with water, a perforated plastics sheet covering the chippings and a top layer of growth medium comprising the above fertilizing composition mixed with sand. [TVA]

L3 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN

Full Text | Citing References

AN 2005:8629 CAPLUS
DN 143:82460
TI Effects of applying two different chemical additives to the litter on broiler performance and the carbon dioxide gas production in poultry houses
AU Choi, I. H.; Nahm, K. H.
CS Feed and Nutrition Laboratory, College of Natural Resources, Taegu University, Gyong San, Gyongbuk, 712-714, S. Korea
SO Han'guk Kagum Hakhoechi (2004), 31(3), 171-176
CODEN: HKHAAE; ISSN: 1225-6625
PB Korean Society of Poultry Science
DT Journal
LA Korean
AB The objectives of this study were to det. the effect of applying two different additives to the litter on broiler performance and the carbon dioxide gas prodn. in poultry cages. In two different expts., the carbon dioxide gas prodn. in poultry litter used for 42 days was measured. The chem. additives were applied to the litter at a rate of 200 g aluminum chloride ($AlCl_3 \cdot 6H_2O$) or 200 g aluminum sulfate

[Al2(SO4)3·14H2O, Alum] + 50 g calcium carbonate per kg litter. There was no effect on broiler performance by the litter additives, but the values of carbon dioxide gas produced from broiler litters which were treated with chem. additives were significantly lower ($P<0.05$ and 0.01) than that of the control. This study showed that carbon dioxide gas prodn. can be reduced by chem. treating the litter with AlCl3 or Alum + CaCO3.

L3 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN

Full Text | Citing References

AN 2001:719964 CAPLUS
DN 136:308958
TI A biotechnological process for treatment and recycling poultry wastes manure as a feed ingredient
AU El Jalil, M. H.; Faid, M.; Elyachioui, M.
CS Microbiology and Biotechnology Laboratory, Biology Department, Faculty of Sciences, Kenitra, Morocco
SO Biomass and Bioenergy (2001), 21(4), 301-309
CODEN: BMSBEO; ISSN: 0961-9534
PB Elsevier Science Ltd.
DT Journal
LA English
AB Poultry wastes manure was dild. by adding the same amt. of water 50-50 (w/v). They were then mixed with 10% molasses. The mixt. was inoculated with a starter culture of Lactobacillus plantarum and Pediococcus acidilactici, and incubated at 30°C for 10 days. Changes in nutritional quality and biochem. properties (pH, total nitrogen, total volatile nitrogen, non protein nitrogen, carbohydrates and ash) were detd. for the raw and the transformed product. In parallel, microbiol. analyses, including std. plate count, enterobacteria and enterococci, were performed. Results indicated that the product obtained from the wastes fermn. showed low counts of enterobacteria and enterococci. Chem. detns. showed a net decrease of the pH to around 4.0 and the growth curve of the lactic acid bacteria showed the success of the acidification process. The total nitrogen was conserved in the product and the total volatile nitrogen was totally eliminated. The product was used for substituting some protein sources in a conventional formula used in laying feeding of three lots. Two formulas contg., resp., 20% and 40% of the product were compared to the control (0%). The food consumption and laying performances were monitored for 30 days. The nutritional test indicated that the incorporation of the poultry manure silage at a rate of up to 40% gave laying performances similar to those obtained with the conventional formula. These results show that it is possible to transform poultry manure by controlled fermn. and that the product has an added value as a feed ingredient.
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN

Full Text | Citing References

AN 2001:290076 CAPLUS
DN 134:280263
TI Soil amendment containing calcium silicate and sulfuric acid
IN Fujiwara, Akioka
PA Toyo Shoji K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001115160	A2	20010424	JP 1999-300843	19991022
PRAI	JP 1999-300843		19991022		

AB An amendment contains **chicken manure**, calcium silicate and/or **calcium carbonate**, and concd. H2SO4 as major components and granulated unpolished rice and the residue of soybeans treated by enzymes as the secondary components. The malodor of chicken manure is controlled in the soil amendment.

L3 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN
Full Text | Citing References
AN 1997:311156 CAPLUS
DN 126:333745
TI Use of alum to inhibit ammonia volatilization and to decrease phosphorus solubility in poultry litter
IN Moore, Philip A., Jr.
PA University of Arkansas, USA
SO U.S., 19 pp., Division of U. S. Ser. No. 129,742, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5622697	A	19970422	US 1995-437991	19950510
	US 5961968	A	19991005	US 1996-640623	19960501
	US 5914104	A	19990622	US 1997-852273	19970507
PRAI	US 1993-129742	B3	19930930		
	US 1995-437991	A3	19950510		
	US 1996-735103	A2	19961022		

AB A method for treating poultry litter which inhibits ammonia volatilization and reduces sol. phosphorus levels in the litter. The method comprises the addn. of alum to litter in an amt. sufficient to maintain the litter pH at values low enough to inhibit ammonia volatilization. The addn. of alum, iron or calcium compds. to litter also effectively ppts. sol. phosphorus in litter, thereby reducing the amt. of sol. phosphorus runoff from fields receiving litter.

L3 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN
Full Text | Citing References
AN 1994:252336 CAPLUS
DN 120:252336
TI Decreasing phosphorus solubility in poultry litter with aluminum, calcium, and iron amendments
AU Moore, P. A., Mr.; Miller, D. M.
CS Plant Sci., ARS, Fayetteville, AR, 72701, USA
SO Journal of Environmental Quality (1994), 23(2), 325-30
CODEN: JEVQAA; ISSN: 0047-2425
DT Journal

LA English
AB Poultry litter contains ~20 g P/kg, of which ~2 g P/kg is water sol. The objective of this study was to det. if sol. P levels could be reduced in poultry litter with Al, Ca, and/or Fe amendments. Poultry litter was amended with alum, sodium aluminate, quick lime, slaked lime, calcitic limestone, dolomitic limestone, gypsum, FeCl2, FeCl3, FeSO4, Fe2(SO4)3, and incubated in the dark at 25° for 1 wk. The Ca treatments were tested with and without CaF2 addns. in an attempt to ppt. fluorapatite. At the end of the incubation period, the litter was extd. with deionized water to det. the water sol. P. Water sol. P levels in the poultry litter were reduced from >2,000 mg P/kg-litter to <1 mg P/kg-litter with the addn. of alum, quick lime, slaked lime, FeCl2, FeCl3, FeSO4, Fe2(SO4)3 under favorable pH conditions. Gypsum and sodium aluminate reduced water sol. P levels by 50-60%. Calcitic and dolomitic limestone were less effective. The results of this study suggest that treating litter prior to field application with some of these compds. could significantly reduce the amt. of sol. P in runoff from litter-amended pastures. Therefore, chem. addns. to reduce sol. P in litter may be a best management practice in situations where eutrophication of adjacent water bodies due to P runoff has been identified. Preliminary calcns. indicate that this practice may be economically feasible. More research is needed, however, to det. any beneficial and/or detrimental aspects of this practice.

L3 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2005 ACS on STN

Full Text | Cited References

AN 1971:447935 CAPLUS
DN 75:47935
TI Nigerian manures. II. Fractionation and mineralization of manure nitrogen
AU Oke, Olusegun L.
CS Chem. Dep., Univ. Ife, Ibadan, Nigeria
SO West African Journal of Biological and Applied Chemistry (1969), 12(1), 22-7
CODEN: WAJBAK; ISSN: 0043-2989
DT Journal
LA English
AB Animal and bird feces were analyzed for total, nitrate, and ammonium N. N availability was tested with guinea grass. Chicken manures contained the most total N and H2O-sol. N (32 and 11 mg/g, resp.), and gave best yields and highest N absorption. Plant yield was highly correlated with sol. and total N, and N uptake with sol. and nitrate N. Nitrification rates of the manures with and without CaCO3 showed that chicken manures accumulated the most nitrate N (500 ppm) and cow manure the least (100 ppm). More nitrate N accumulated in the presence of CaCO3.

L3 ANSWER 9 OF 13 PROMT COPYRIGHT 2005 Gale Group on STN

Full Text

AN 2003:565822 PROMT
TI Vending/OCS/bulk vending product, equipment, accessories and component manufacturers and service suppliers.
SO Automatic Merchandiser, (June 2003) Vol. 45, No. 6, pp. 102(27). ISSN: ISSN: 1061-1797.
PB Johnson Hill Press, Inc.

DT Newsletter
LA English
WC 23370
FULL TEXT IS AVAILABLE IN THE ALL FORMAT
AB A A A
THIS IS THE FULL TEXT: COPYRIGHT 2003 Johnson Hill Press, Inc.

Subscription: $25.00 per year. Published monthly. 1233 Janesville Avenue, Fort Atkinson, WI 53538.

L3 ANSWER 10 OF 13 PROMT COPYRIGHT 2005 Gale Group on STN

Full Text

AN 2002:467781 PROMT
TI Chemical tradenames. (F-P).(list of chemical companies throughout the world with contact data)(Industry Overview)(Cover Story)
SO Chemical Week, (27 Sep 2002) Vol. 164, No. 38, pp. 486(12).
ISSN: ISSN: 0009-272X.
PB Chemical Week Associates
DT Newsletter
LA English
WC 18020
FULL TEXT IS AVAILABLE IN THE ALL FORMAT
AB F-1000, 2000, 2100, 2200, 2300, 3600, 4400: Aluminum hydroxide dried gel -- Reheis Inc
THIS IS THE FULL TEXT: COPYRIGHT 2002 Chemical Week Associates

Subscription: $99.00 per year. Published weekly. P.O. Box 7721, Riverton, NJ 08077-9021.

L3 ANSWER 11 OF 13 USPATFULL on STN

Full Text | Citing References

AN 2004:334189 USPATFULL
TI Use of magnesium hydroxide and calcium compounds with and without a carrier medium to treat animal waste: to reduce air emissions (including ammonia volatilization) from, retain nutrients from, and manage phosphorous solubility of decaying animal litter, manure, and animal excretions and waste in CAFOs and animal enclousures; to reduce farm nutrient runoff; to extract and bind waste nutrients for fertilizer use; and to reduce air emission of waste-based fertilizers and animal bedding
IN Champ, Michael Augustus, Falls Church, VA, UNITED STATES
Bakewell, Charles Adams, Earlysville, VA, UNITED STATES
PI US 2004265266 A1 20041230
AI US 2004-831410 A1 20040424 (10)
PRAI US 2003-465345P 20030425 (60)
US 2003-497839P 20030826 (60)
DT Utility
FS APPLICATION
LREP Charles A. Bakewell, 1070 Earlysville Forest Drive, Earlysville, VA, 22936
CLMN Number of Claims: 21
ECL Exemplary Claim: 1
DRWN 3 Drawing Page(s)
LN.CNT 1091
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A method for treating CAFO animal litter, manure and waste, reducing volatilization, retaining nitrogen and phosphorous, and reducing soluble phosphorus levels in litter, manure-based compost, and manure-based fertilizers. The method adds magnesium hydroxide (and calcium carbonate or calcium compounds) with or without a carrier medium to animal litter, compost, manure, and manure-based fertilizers as well as pet and zoo animal bedding material to maintain the litter pH at values inhibiting ammonia and hydrogen sulfide volatilization. Calcium compounds added to the litter and waste reduce soluble phosphorus runoff from fields receiving the resulting litter, fertilizer or lagoon water. Application of magnesium hydroxide and calcium compounds in CAFO waste, washwaters and lagoons precipitates a compound recoverable as fertilizer material. The method is effective in poultry, hog, and dairy CAFOs, animal care facilities, pet and zoo enclosures, pastures, agricultural fields, manure storage piles, animal waste treatment, manure-based fertilizer manufacture, and manure-based fertilizer products.

L3 ANSWER 12 OF 13 USPATFULL on STN

Full Text | Citing References

AN 86:726 USPATFULL
TI Clay-breaking and fertilizing composition and method of breaking and fertilizing heavy and compacted soils
IN McKenzie, David L., 26 Rivermead, Cullompton, Devon, United Kingdom
PI US 4563207 19860107
AI US 1983-534246 19830921 (6)
DT Utility
FS Granted
EXNAM Primary Examiner: Lander, Ferris H.
LREP Cushman, Darby & Cushman
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN 3 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 316
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A clay-breaking and fertilizing composition comprises a finely ground mixture of chicken manure, muriate of potash and a rock phosphate having a high limestone content and containing the phosphate in the form of the basic tricalcium diphosphate. When spread on heavy, clay soils or compacted ground and watered, the composition breaks up the soil and fertilizes it such that, after two to three months the soil is friable and immediately ready for crop cultivation. The composition is also usable in a stratified cultivation bed, particularly for desert reclamation, comprising an impermeable tank, a bottom layer of wood or stone chippings which can be supplied with water, a perforated plastics sheet covering the chippings and a top layer of growth medium comprising the above fertilizing composition mixed with sand.

L3 ANSWER 13 OF 13 USPATFULL on STN

Full Text | Citing References

AN 85:75131 USPATFULL
TI Poultry feed supplement and method of making
IN Henderson, Charles J., Nipomo, CA, United States
Cotton, Gerald L., Santa Maria, CA, United States
PA Betteravia Byproducts Co., Santa Maria, CA, United States (U.S. corporation)

PI US 4560561 19851224
AI US 1984-591017 19840319 (6)
DT Utility
FS Granted
EXNAM Primary Examiner: Penland, R. B.
LREP Bissell, Henry M.
CLMN Number of Claims: 24
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 384
AB An improved poultry feed supplement is provided by homogeneously mixing together, preferably utilizing both rotary and lateral oscillatory motions, waste lime from a sugar refining process and not in excess of about 20% of nutritive agglomerating constituent selected from the group consisting of beet molasses, cane molasses, wood molasses, citrus molasses, corn steep liquor, invert sugar solution and mixtures thereof. The moisture content of the mix is adjusted, if necessary, during mixing to about 18 to 23 weight percent, preferably about 21 weight percent, and the resulting mixture preferably is formed into pellets of an average diameter of about 1/16", which pellets are then dried to a hard stable form, with a moisture content of, for example, about 0 to 4 weight percent. The feed supplement is used to improve the strength of poultry egg shells. The supplement is simple, efficient and inexpensive to make and use. The supplement utilizes constituents which have heretofore generally been considered waste by-products of the sugar refining process, thereby improving the efficiency of the overall process.

=> s (poultry or turkey or chicken) (10a) (waste) (20a) calcium carbonate and (LIGNOSULFONATE OR LIGNOSULPHONATE OR LIGNIN SULPHONATE OR LIGNIN SULFONATE) (10A) (BIND####)
14 FILES SEARCHED...
L4 0 (POULTRY OR TURKEY OR CHICKEN) (10A) (WASTE) (20A) CALCIUM CARBONATE AND (LIGNOSULFONATE OR LIGNOSULPHONATE OR LIGNIN SULPHONATE OR LIGNIN SULFONATE) (10A) (BIND####)

=> s (poultry or turkey or chicken) (10a) (waste) and (LIGNOSULFONATE OR LIGNOSULPHONATE OR LIGNIN SULPHONATE OR LIGNIN SULFONATE) (10A) (BIND####)
16 FILES SEARCHED...
L5 3 (POULTRY OR TURKEY OR CHICKEN) (10A) (WASTE) AND (LIGNOSULFONATE OR LIGNOSULPHONATE OR LIGNIN SULPHONATE OR LIGNIN SULFONATE) (10A) (BIND####)

=> d 1-3 bib ab

L5 ANSWER 1 OF 3 USPATFULL on STN
Full Text | Cited References
AN 2003:219399 USPATFULL
TI Amorphous solid cast feed product made by solidifying liquid agricultural by products
IN Ethington, Reed T., JR., Marshall, MN, UNITED STATES
Lessman, Randall M., Tracy, MN, UNITED STATES
PI US 2003152689 A1 20030814
US 6726941 B2 20040427
AI US 2002-223580 A1 20020819 (10)
PRAI US 2001-313614P 20010820 (60)

DT Utility
FS APPLICATION
LREP PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A., 4800 IDS CENTER, 80 SOUTH 8TH STREET, MINNEAPOLIS, MN, 55402-2100
CLMN Number of Claims: 41
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1416
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An amorphous solid cast feed product is made by solidifying a substantially liquid agricultural byproduct. The byproduct may be selected from stillage, condensed fermented corn solubles, stillage, condensed distillers solubles, whey, condensed whey solubles, or any mixture thereof. The amorphous solid cast feed product may further include an exogenous source of a carbohydrate, a fat, a vitamin, a mineral, and/or nitrogen, as well as a sulfonated lignin material, a recycled animal waste product, and/or another miscellaneous fibrous material. The substantially liquid agricultural byproduct may first be condensed by heat, then solidified by being cooled in a mold. It is emphasized that this abstract is provided to comply with the rules requiring an abstract that will allow a searcher or other reader to quickly ascertain the subject matter of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. 37 C.F.R. .sctn.1.72(b).

L5 ANSWER 2 OF 3 USPATFULL on STN

Full Text | Hide References

AN 2003:204912 USPATFULL
TI Method for determining the dissolution rate of a solid water treatment product
IN Hatch, Steven R., Naperville, IL, UNITED STATES
PI US 2003141258 A1 20030731
US 6685840 B2 20040203
AI US 2002-66168 A1 20020131 (10)
DT Utility
FS APPLICATION
LREP Patent & Licensing Department, Ondeo Nalco Company, Ondeo Nalco Center, 1601 W. Diehl Road, Naperville, IL, 60563-1198
CLMN Number of Claims: 9
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 781
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A method of making a solid water treatment product with an optimal rate of dissolution is described and claimed. A fluorescent tracer is used to determine the rate of dissolution of the solid water treatment product and the composition and method of manufacturing the solid water treatment product are adjusted as needed to make the rate of dissolution optimal. The solid water treatment product can be used in many industrial water treatment systems. When the solid water treatment product is used, the amount of solid water treatment product present in the water of the industrial water system can be determined, and adjusted, by using a fluorometer to measure the fluorescent signal of the fluorescent tracer present in the product and relating that measurement to the amount of product in the water itself.

L5 ANSWER 3 OF 3 USPATFULL on STN

Full Text | Claim References

AN 1998:74884 USPATFULL
TI Process for producing odorless organic and semi-organic fertilizer
IN Kazemzadeh, Massoud, 10025 Beard Ave. So., Bloomington, MN, United States 55431
PI US 5772721 19980630
AI US 1995-561376 19951121 (8)
DT Utility
FS Granted
EXNAM Primary Examiner: Lander, Ferris
LREP Niebuhr, Frederick W.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN 1 Drawing Figure(s); 1 Drawing Page(s)
LN.CNT 584
AB A substantially odorless and sterilized fertilizer in pellet form is produced by combining a dry organic waste material and a dry binder material, then combining the resulting dry mixture with steam, water and/or further organic waste in the form of sludge. The resulting material is provided to an extruder for a more thorough, dispersive mixing, a pressure increase to at least 100 psi, and heating above the glass transition temperature of the binder, and more preferably to at least about 125° C. to substantially sterilize the material mass. The extruded material is forced through a die and released to an ambient environment, rapidly reducing pressure of the material and thereby lysing spores and microorganisms surviving conditions within the extruder. The emerging material is segmented and dried, or segmented and tumbled to form pellets, then dried. When dried to a moisture content of at most 7%, the pellets further can be inoculated with an active agent within an adhesive, resulting in a final moisture content of 10-14%.

s (poultry or turkey or chicken) (10a) (manure or waste or litter) (20a) calcium carbonate
15 FILES SEARCHED...
L3 13 (POULTRY OR TURKEY OR CHICKEN) (10A) (MANURE OR WASTE OR LITTER) (20A) CALCIUM CARBONATE

AN 2003:247922 USPATFULL
TI Compost granulation method
IN Phinney, Robin, Calgary, CANADA
PA Agronomic Growth Industries Ltd., Calgary, CANADA (non-U.S. corporation)
PI US 2003172699 A1 20030918
AI US 2003-412305 A1 20030414 (10)
RLI Division of Ser. No. US 2000-565534, filed on 5 May 2000, GRANTED, Pat. No. US 6582637
PRAI US 1999-132569P 19990505 (60)
US 1999-132681P 19990505 (60)
DT Utility
FS APPLICATION
LREP OGILVY RENAULT, 1981 MCGILL COLLEGE AVENUE, SUITE 1600, MONTREAL, QC, H3A2Y3
CLMN Number of Claims: 17
ECL Exemplary Claim: 1
DRWN 3 Drawing Page(s)
LN.CNT 692
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Method of granulating compost for the formulation of fertilizers. In one embodiment, the compost is ground to dust and pan granulated. A variety of ancillary materials may be incorporated into the compost mix for a wide range of possible applications. An embodiment is provided where agricultural seeds may be encapsulated in compost to enhance the quality of seed and reduce wastage during planting.

```
s (lignosulfonate ) (10a) (bind####) and (manure or litter)
L6          25 (LIGNOSULFONATE ) (10A) (BIND####) AND (MANURE OR LITTER)

=> dup rem l6
DUPLICATE IS NOT AVAILABLE IN 'FEDRIP, FOREGE, NUTRACEUT'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L6
L7           24 DUP REM L6 (1 DUPLICATE REMOVED)

=> d  1-24 bib ab
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